

**REMARKS**

Applicants respectfully request reconsideration and allowance of this application in view of the above amendments and the following remarks.

Claim 8 has been cancelled without prejudice or disclaimer by the present amendment, and claims 42-49 have been added. Claims 11, 15 and 20, unless otherwise discussed below, have been amended only to correct minor grammatical errors.

Claims 1 – 7 were again rejected under 35 USC 102(b) as being anticipated by Uchikawa. This rejection is respectfully traversed.

Claim 1 has been amended to recite the patentable feature of the present invention originally recited in claim 8 (now cancelled). Specifically, claim 1 now recites that one or more of the elements that constitute the ceramic substrate is substituted with an element other than a constituent element, and the ceramic carrier is capable of supporting the catalyst metal directly on the substituting element. Support for this feature is found, for example, in the specification beginning at page 18, line 26. The substituting element has, for example, an empty orbit in the d or f orbit, has an energy level near that of the catalyst being supported, and therefore has a higher tendency to exchange electrons and bond with the catalyst component. Alternatively, the substituting element may have two or more oxidation states and therefore a higher tendency to exchange electrons and bond with the catalyst component.

Uchikawa, which relates to an apparatus for sensing gas (oxygen), at col. 6, lines 15-34 describes the make-up of the catalyst layer 43 in FIG. 1 and its associated carrier. However, it does not teach that one or more of the elements that constitute the ceramic substrate is substituted with an element other than a constituent element to enable the ceramic carrier to support the catalyst metal directly on the substituting element.

In view of the above noted lack of teaching in Uchikawa, Applicants assert that Uchikawa does not teach all elements recited in claim 1, and therefore respectfully request that the Examiner's rejection under 35 USC 102(b) of claim 1, as well as claims 2-7 that depend therefrom, be withdrawn.

Claims 18 – 20 were rejected under 35 USC 102(b) as being anticipated by Deeba et al. (U.S. Patent No. 6,497,848). This rejection is respectfully traversed.

Claim 23 has been amended into independent form to recite the limitations of claim 18, now cancelled. Therefore, claim 23 now specifically recites a patentable feature of the present invention; namely, that one or more of the elements that constitute the ceramic substrate is substituted with an element other than a constituent element, and the ceramic carrier is capable of supporting the catalyst metal directly on the substituting element. Claim 20, which has been amended only to correct a grammatical error, recites a ceramic carrier capable of supporting a catalyst directly on the surface of a ceramic substrate.

Deeba does not anticipate claim 20 or 23, as it does not teach all elements recited in claims 20 and 23. More specifically, Deeba, which relates to a catalyst trap for converting NO<sub>x</sub> in an exhaust stream, does not teach that one or more of the elements that constitute the ceramic substrate is substituted with an element other than a constituent element (claim 23), and that the ceramic carrier is capable of supporting the catalyst metal directly on the substituting element (claims 20 and 23). The Examiner asserts that Deeba references the use of a ceramic carrier (col. 14) and the use of cordierite as a substrate (cols. 4 and 5). However, there is no discussion of a ceramic carrier that is capable of supporting a catalyst directly on the surface of a ceramic substrate, much less discussion of a substitute element being used in the carrier in place of a

constituent element to enable the ceramic carrier to support the catalyst metal directly on the substituting element.

In view of the above noted lack of teaching in Deeba, Applicants assert that Deeba does not teach all elements recited in claims 20 and 23, and therefore respectfully request that the Examiner's rejection under 35 USC 102(b) of claims 20 and 23, as well as claim 19, which has been amended to depend from claim 23, be withdrawn.

Claims 1 – 16 and 18 – 32 were rejected under 35 USC 103(a) as being unpatentable over Beauseigneur in view of Deeba and Uchikawa. This rejection is respectfully traversed.

The present invention includes *inter alia* the feature of a ceramic carrier capable of supporting a catalyst component directly on the surface of a ceramic substrate.

Deeba and Uchikawa are inapplicable for the above discussed reasons.

Beauseigneur discloses a porous catalyst support including a ceramic substrate and colloidal particles bonded to a metal catalyst and applied to the ceramic substrate. More specifically, the colloidal particles are part of a washcoat layer for increasing the surface area of the catalyst support. Therefore, the catalyst is not loaded directly onto a ceramic substrate surface as recited in, for example, claims 1, 11, 20, 22, 23 (amended into independent form to include the limitations of claim 18, now cancelled) and 26 (amended into independent form to also include the limitations of claim 18), as the washcoat layer is necessary. The increase in surface area of the catalyst support has associated drawbacks as discussed, for example, in the BACKGROUND section of the present application. Further, there is no discussion of a substitute element being used in a ceramic carrier in place of a constituent element (as recited, for example, in amended claims 1 and 23) to enable the ceramic carrier to support a catalyst metal directly on the substituting element.

In view of the above noted lack of teaching in Uchikawa, Deeba, and Beauseigneur, Applicants assert that this three-way combination of references does not render the present invention obvious as recited in independent claims 1, 11, 20, 22, 23 and 26 and therefore respectfully request that the Examiner's rejection under 35 USC 103(a) of these claims, as well as all claims that depend therefrom, be withdrawn.

In view of the Examiner's present rejections, Applicants note that in the Final Rejection the Examiner has failed to address the limitations that one or more of the elements that constitute the ceramic substrate is substituted with an element other than a constituent element, and the ceramic carrier is capable of supporting the catalyst metal directly on the substituting element. These features, when interpreted as defined by the Applicants in the specification, are neither taught nor suggested by the cited references when considered either individually or in combination.

Claims 18 – 32 were provisionally rejected under the doctrine of obviousness-type double patenting as being unpatentable over claims 1 – 11 of co-pending application 09/961,203 to Nakanishi.

In response, Applicants have submitted herewith a terminal disclaimer to obviate the provisional double patenting rejection. Therefore, Applicants respectfully request that the Examiner's rejection be withdrawn.

The Examiner should note that Applicants have added new claims 42-60. These claims correspond to limitations recited in other claims in the application as follows:

Claims 42-47 (claims 2-7)

Claim 48 (claim 19)

Claim 49 (claim 21)

Each of the new claims noted above is supported by the specification and drawings in at least the same manner as the corresponding claims noted in parentheses.

Further, in view of the addition of the above new claims, and in view of the cancellation of claim 8, Applicants have amended the dependencies of certain of the dependent claims as follows: claims 9-10 now depend on claim 1; claims 19, 21, 24, 25 and 32 now depend from claim 23; and claim 27 now depends from claim 26.

In view of the foregoing, Applicants respectfully submit that this application is in condition for allowance. A timely notice to that effect is respectfully requested. If questions relating to patentability remain, the examiner is invited to contact the undersigned by telephone.

A Request for a three-month extension of time and the corresponding extension fee are being submitted concurrently herewith. Please charge any additional unforeseen fees that may be due to Deposit Account No. 50-1147.

Respectfully submitted,



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David G. Posz  
Reg. No. 37,701

DGP/yf  
Posz & Bethards, PLC  
11250 Roger Bacon Drive, Suite 10  
Reston, VA 20190  
Phone (703) 707-9110  
Fax (703) 707-9112  
Customer No. 23400